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The Planning and Control of NASA Programs and Resources

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The Planning and Control of NASA Programs and Resources

Prepared by
Management Processes and Directives Branch
Information Systems Division

National Aeronautics and Space Administration
Washington, D.C.

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and Space Administration

**Scientific and Technical
Information Branch**

1981

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SECTION I

INTRODUCTION

This digest describes, in summary form, the major management systems used to plan and control NASA programs and resources and how they are integrated to form the agency's general management approach in carrying out its mission. Recognizing the scope and complexity of the systems described, the digest portrays, in a general overview, how the various systems, General, Program, Institutional, Functional and Resources, come together in a single management approach within the basic organizational structure of the agency. This overview will be reviewed periodically to assure that the approach described is current. In this regard, the digest can be used at all management levels to obtain a good picture of the agency's total management approach and as a device for orienting new staff members.

An appendix is included at the back of the digest listing the documents that contain more detailed descriptions of the various processes and techniques involved in the agency's major management systems.

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SECTION II

GENERAL MANAGEMENT

- **Principal Objectives of the Agency Mission**

NASA employs a structure of goals and objectives to plan, direct and control the use of its resources within the broad objectives of the Space Act. National aerospace goals, established by the President and the Congress, are directly reflected in the NASA structure goals and objectives, its aerospace missions, and in the principal programs identified in its budget submission. The National aerospace goals (U. S. Civil Space Policy) for the next decade are as follows:

- Emphasize space applications that will bring important benefits to our understanding of earth resources, climate, weather, pollution and agriculture, and provide for the private sector to take an increasing responsibility in remote sensing and other applications.

- Emphasize space science and exploration in a manner that retains the challenge and excitement and permits the nation to retain the vitality of its space technology base, yet provides short-term flexibility to impose fiscal constraints when conditions warrant.

- Take advantage of the flexibility of the space shuttle to reduce the cost of operating space over the next two decades to meet national needs.

- Increase benefits for resources expended through better integration and technology transfer among the national space programs and through more joint projects when appropriate, thereby increasing the return on the 100 billion investment in space to the benefit of the American people.

- Assure American scientific and technological leadership in space for the security and welfare of the nation and continue R&D necessary to provide the basis for later programmatic decisions.

- Demonstrate advanced technological capabilities in open and imaginative ways having benefit for developing as well as developed countries.

- Foster space cooperation with nations by conducting joint programs.

- Confirm our support of the continued development of a legal regime for space that will assure its safe and peaceful use for the benefit of mankind.

- Continue to pursue the improvement of the usefulness, performance, speed, safety and efficiency of aeronautical and space vehicles as authorized in the Space Act of 1958.

- Roles of Key Officials

The ADMINISTRATOR is responsible under the National Aeronautics and Space Act to the President for the total management of NASA and all of its activities. He fulfills his responsibility by participating in all key decisions, and serving as the principal agency spokesman in external relationships.

The DEPUTY ADMINISTRATOR is responsible under the National Aeronautics and Space Act for assisting the Administrator in the exercise of all of his responsibilities and for performing such duties as the Administrator may prescribe. At the present time, the Deputy Administrator is the primary official responsible for internal management, including the coordination of program and institutional management matters.

The ASSOCIATE DEPUTY ADMINISTRATOR works closely with the Administrator, Deputy Administrator and other key officials to assure overall coordination of NASA's external and internal affairs.

The CHIEF SCIENTIST is responsible for advising the Administrator on the technical content of the Agency's total program from the viewpoint of scientific objectives.

The CHIEF ENGINEER is responsible for advising the Administrator on questions regarding the conduct of development efforts and mission operations so as to insure a sound engineering basis with proper programmatic controls.

The ASSOCIATE ADMINISTRATOR/COMPTROLLER is responsible for the preparation of the agency budget, allocation and control of appropriations, financial accounting and reporting of all agency funds, supply and equipment management and overall facilities management including new construction.

The ASSOCIATE ADMINISTRATOR FOR EXTERNAL RELATIONS provides a focus for a policy formulation and for the coordination and overview of NASA interactions with external organizations, both public and private (whether domestic or international), and with private individuals, and ensures that effective relationships are created and maintained for the accomplishment of agency objectives.

The ASSOCIATE ADMINISTRATOR FOR MANAGEMENT OPERATIONS provides an integrated focus for agencywide institutional management policy and for management of institutional resources, including control of inhouse manpower and research and program management funds in providing support to NASA programs and activities.

The ASSOCIATE ADMINISTRATORS FOR PROGRAMS provide for the planning, direction, execution and evaluation of specific parts of the overall NASA program as follows:

- Associate Administrator for Space Transportation Systems --all elements of the Space Transportation System, including orbiters, engines, external tanks, boosters, upper stages and ground systems.
- Associate Administrator for Space Transportation Operations - all U.S. civil launch capabilities, Spacelab development and operations.
- Associate Administrator for Space Science - space science including astrophysics, solar terrestrial, planetary and life sciences.
- Associate Administrator for Space and Terrestrial Applications - applications including earth resources monitoring, communications, navigation and traffic control, ocean and atomspheric monitoring, space technology and technology utilization.
- Associate Administrator for Aeronautics and Space Technology - aeronautics, space, and energy research and technology.
- Associate Administrator for Space Tracking and Data Systems - tracking, data acquisition and processing, and communications support to all NASA flight projects.

The INSPECTOR GENERAL is responsible under Public Law 95-452 for providing independent audits and investigations to (1) promote economy, efficiency, and effectiveness in the administration of NASA programs and operations and (2) detect and prevent fraud and abuse in NASA programs and operations.

The GENERAL COUNSEL provides legal advice and assistance to all organizational components of NASA.

The DIRECTOR OF LEGISLATIVE AFFAIRS provides for the monitoring and coordination of all communications and relationships (both legislative and nonlegislative) between the NASA and the U. S. Congress.

The DIRECTOR OF PROCUREMENT serves as the senior advisor to management on procurement and business matters and exercises specific procurement authorities delegated by the Administrator. He oversees the management of the total NASA procurement process.

The DIRECTOR OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION provides an integrated focus for implementation of NASA efforts to assist small business including firms owned and controlled by socially and economically disadvantaged individuals, women's business enterprise and labor surplus area firms.

The DIRECTOR OF EQUAL OPPORTUNITY PROGRAMS advises and assists the Administrator and other senior management officials in establishing, maintaining and conducting programs to promote equal opportunity for employees and applicants for employment with NASA.

- Organizational Approach

The agency's broad organizational approach is responsive to the mission responsibilities outlined in the Space Act.

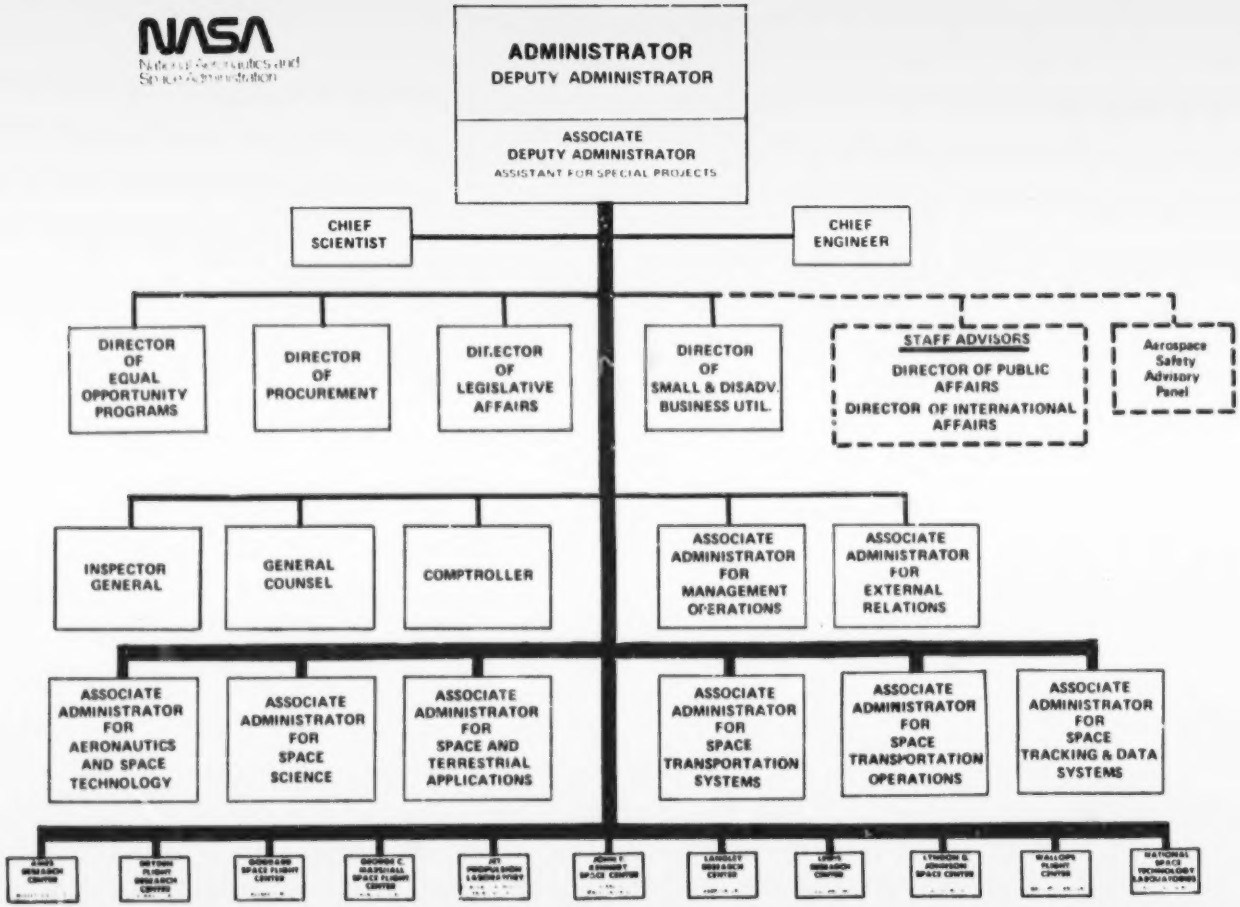
The overall organizational structure is characterized by a management style or manner which assigns programs to Headquarters Program Offices according to their respective areas of technical overview and mission orientation. (For example, the Office of Space and Terrestrial Applications is assigned and manages that work which seeks to apply space and space derived technology to terrestrial needs and problems.) The Program Offices develop specific objectives and shape their individual management approach to meet their program responsibilities, recognizing the special characteristics and interfaces required of their respective efforts.

NASA maintains nine field centers, the Jet Propulsion Laboratory and the National Space Technology Laboratories each of which is responsible for:

(1) the execution of research and development projects and tasks assigned to it consistent with its charter,

(2) the effective and efficient utilization of assigned institutional resources.

The NASA organizational chart, Figure 1, identifies the relationship between the Administrator, Program Offices and the field centers.



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(Supersedes Chart dated October 18, 1978)

Figure 1

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SECTION III

PROGRAM MANAGEMENT

- **Definition**

  Program management is the process of planning for, directing, evaluating, and controlling the technical effort and resources utilization in fulfilling the objectives of approved NASA programs.

- **Organization and Approach**

  The agency's underlying organizational philosophy is that Headquarters is responsible for the general management of R&D programs and maintenance of NASA technical capability and institutional resources; that project management, the management of individual research and technology tasks and the maintenance of the center's technical capability is the center's responsibility.

- **Cycle of Research and Development Activities**

  NASA R&D programs represent a continuum of activities ranging from research and technology efforts through operational programs (see Figure 2). These activities may be viewed as stages or steps in a process which begins with the flow of new ideas and aerospace concepts that ultimately will lead to the acquisition of scientific knowledge, technical advances or user services. To accomplish this transition process, all work undertaken by NASA goes through an evolutionary cycle of planning, approval, and control. Figure 3 depicts the overall process which begins with conceptual planning aimed at the development of agency goals and objectives. Those ideas and concepts which look promising are subjected to more rigorous examination and detailed planning in order to define and select the best objectives, missions, and tasks to be performed. As selections are made and depending on the nature of the effort, the research or development activity is subjected to either the Research and Technology Objective and Plan (RTOP) process or the project planning process. Both research and technology activities and project activities employ individual documentation processes to secure final commitment to the effort described. Broad center and institutional considerations are incorporated in the planning process and are reflected in the documentation before final approval is granted.

NASA'S WORK FORMS A CONTINUUM OF ACTIVITIES

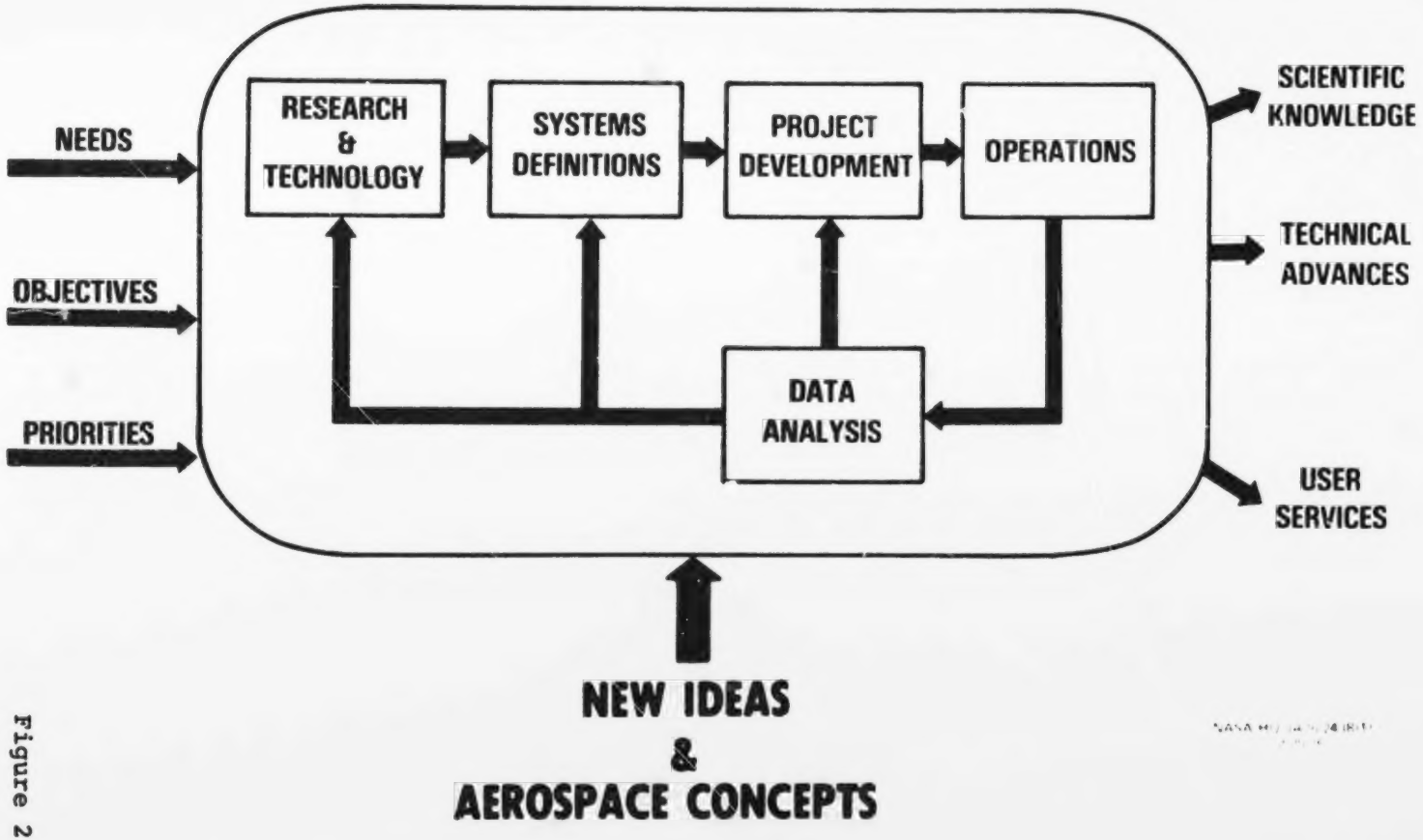

Figure 2

PLANNING AND CONTROL PROCESS

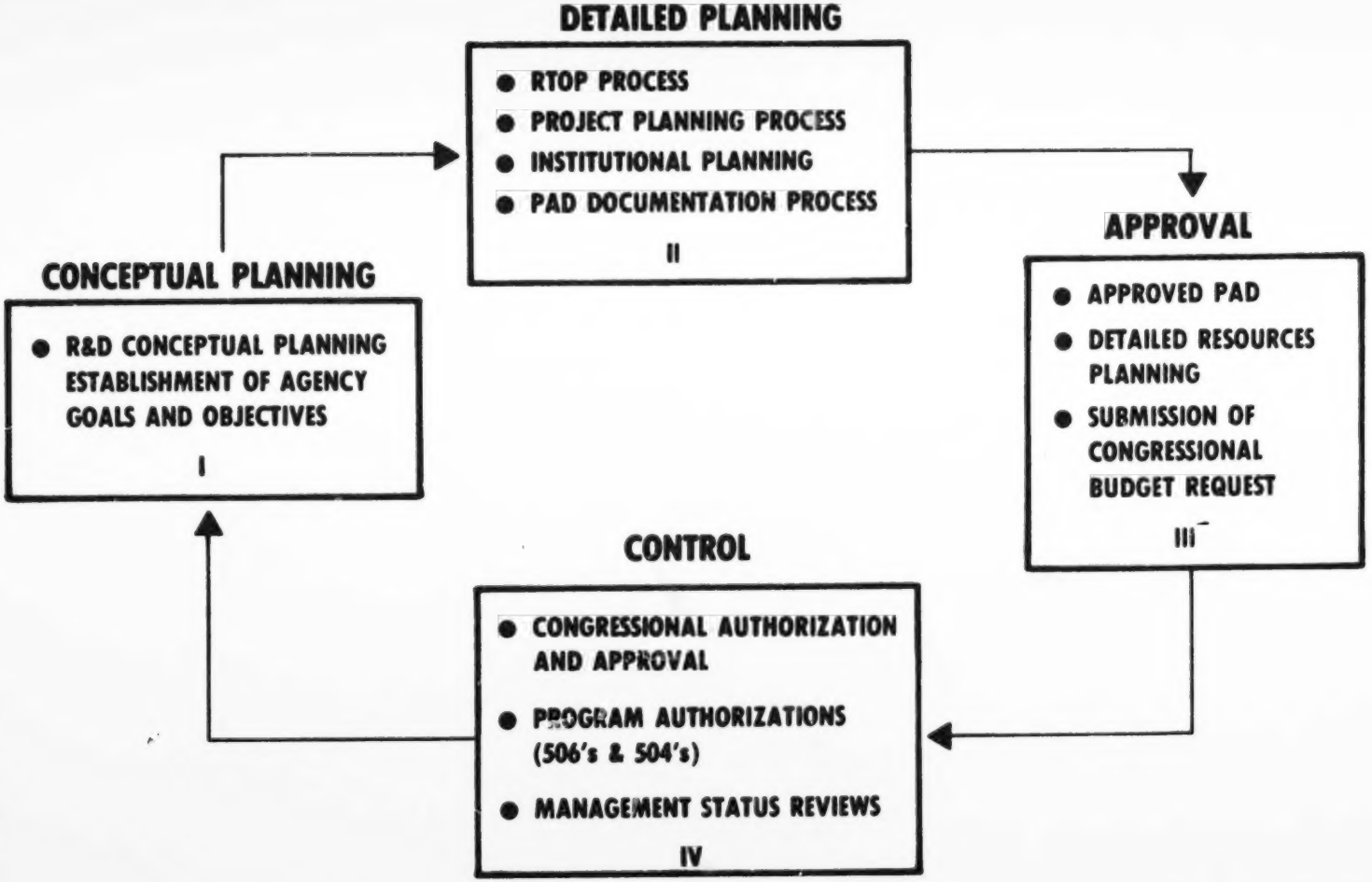

Figure 3

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After approval, funding for development projects and research and technology activities is implemented and controlled through the use of resources authority warrants issued from Headquarters to the centers for accomplishment of the work.

- R&D Planning

Conceptual Planning

The conceptual planning process begins by defining program goals and objectives. To assist in the definition, there is a close relationship between NASA, industry, universities and other Government agencies and Congress. Advice on areas of emphasis and promising mission ideas is provided to NASA through various advisory groups such as the National Academy of Engineering, the National Academy of Sciences, and the NASA Advisory Council and its Committees. Special studies such as the Outlook for Space and the Outlook for Aeronautics also provide a general frame of reference for examining the merits of new ideas. The process of conceptual planning culminates in the definition of program goals and objectives and the nomination of promising missions. This is an important part of planning because just as the upward flow of ideas and studies provides a stimulus to the formulation of broad program goals, the downward flow of goals and specific objectives provides the centers with the framework for more detailed planning. Centers, then, are provided with a clear set of program objectives, derived from a careful assessment of national needs and goals. Candidate missions, in turn, are carefully evaluated and ranked at Headquarters, before centers are asked to further refine them through the discipline of a detailed planning process. To focus the conceptual planning effort across the entire NASA research, technology and development spectrum at Headquarters, the NASA Council was established to coordinate and integrate the agency's program plans for the future and provide the formal mechanism for continuing oversight of program planning activities.

Definition of R&D Efforts

Once conceptual planning is complete, the next step in the process is program definition and approval. Depending on the nature of work proposed, different approaches, levels of management control and planning techniques are employed. At one end of the spectrum is research and technology. Here there is a need for innovation and risk. A careful description of the technical objective is essential

but detailed definition of the work plan is not needed or desirable. At the other end of the spectrum is project development and operations. Here, the larger scope of the effort requires a very systematic definition of tasks to be selected and establishment of milestone schedules for their accomplishment. Emphasis is placed on minimizing, or recognizing and planning for, risks through project definition and management techniques which provide a high degree of visibility and control.

RTOP Process

To manage research and technology activities, the Research and Technology Objective and Plan (RTOP) process is used. The RTOP process covers all those activities that have as their objective the acquisition of specific knowledge, information, techniques, data, systems, etc., that will provide a capability for future experiments, developments, applications, etc., in broad support of agency goals. Included in this category are fundamental research, discipline technology, systems technology, experimental programs, systems studies, payload definition activities, etc. All Program Offices and all centers have some research and technology activities. The programmatic approach and center response vary according to future research needs and mission orientation. The principal Headquarters focus for this effort is the Office of Aeronautics and Space Technology (OAST).

The overall Research and Technology Objective and Plan (RTOP) process begins with a definition of need and opportunity as part of conceptual planning. This is a joint Headquarters and center responsibility with inputs from advisory groups and the user community. It is followed by succeedingly lower levels of detailed planning identifying specific objectives, measurable targets, and individual research tasks. These tasks are reviewed and consolidated through a series of negotiations which form the basis of a joint Program Office/center commitment to broad technology objectives and resource levels.

Before final RTOP approval is granted, OAST, on behalf of the Deputy Administrator, reviews all research and technology work in accordance with NASA Management Issuance 7100.12. This issuance establishes a single RTOP system for all Program Offices to avoid unwarranted duplication and to assure that research and technology resources are committed to efforts which have been defined in terms of

a national importance and agency priorities. Abstracts of approved RTOPs are published annually in a comprehensive "RTOP Summary Report" by OAST. (A chart depicting the overall review process is shown in Figure 4.)

Project Planning

At the other end of the spectrum are all those activities that have as their objective the explanation of space or the demonstration, or reduction to practice, of those aerospace concepts which have been systematically selected and developed to meet national needs and the mission and goals of NASA. These activities generally involve large projects requiring the development of aerospace hardware and/or ground and flight equipment. Large groupings of research or software efforts such as the National Climate Program may also require the rigor of project planning to gain management insight into complex systems efforts.

Generally, these large projects are the result of project study efforts completed before their emergence as candidate agency projects.

Using the body of knowledge developed from the research and technolgoy process and past development programs, potentially interesting aerospace concepts and ideas are investigated in a very limited way by field centers to determine broad feasibility.

Those concepts which appear promising are subjected to an initial study effort. The purpose of this effort is to develop a framework on which sound judgements relating to technical feasibility, scientific value, and relationship to national needs can be examined. The studies, which are designed to investigate cost, schedule and viable technical alternatives, etc., are usually conducted by in-house center manpower following approval by the concerned Headquarters Program Office.

Those missions which still look feasible are examined through a more intensive study effort, usually with contractor participation. Analysis is deepened to define systems and subsystems in sufficient depth to minimize the associated risk and explore various management and technical alternatives in accordance with Program Office criteria and direction.

Project planning is concerned with the selection and evolution of worthy Research and Development candidate projects in an orderly and efficient manner. Planning and

RTOP APPROVAL PROCESS

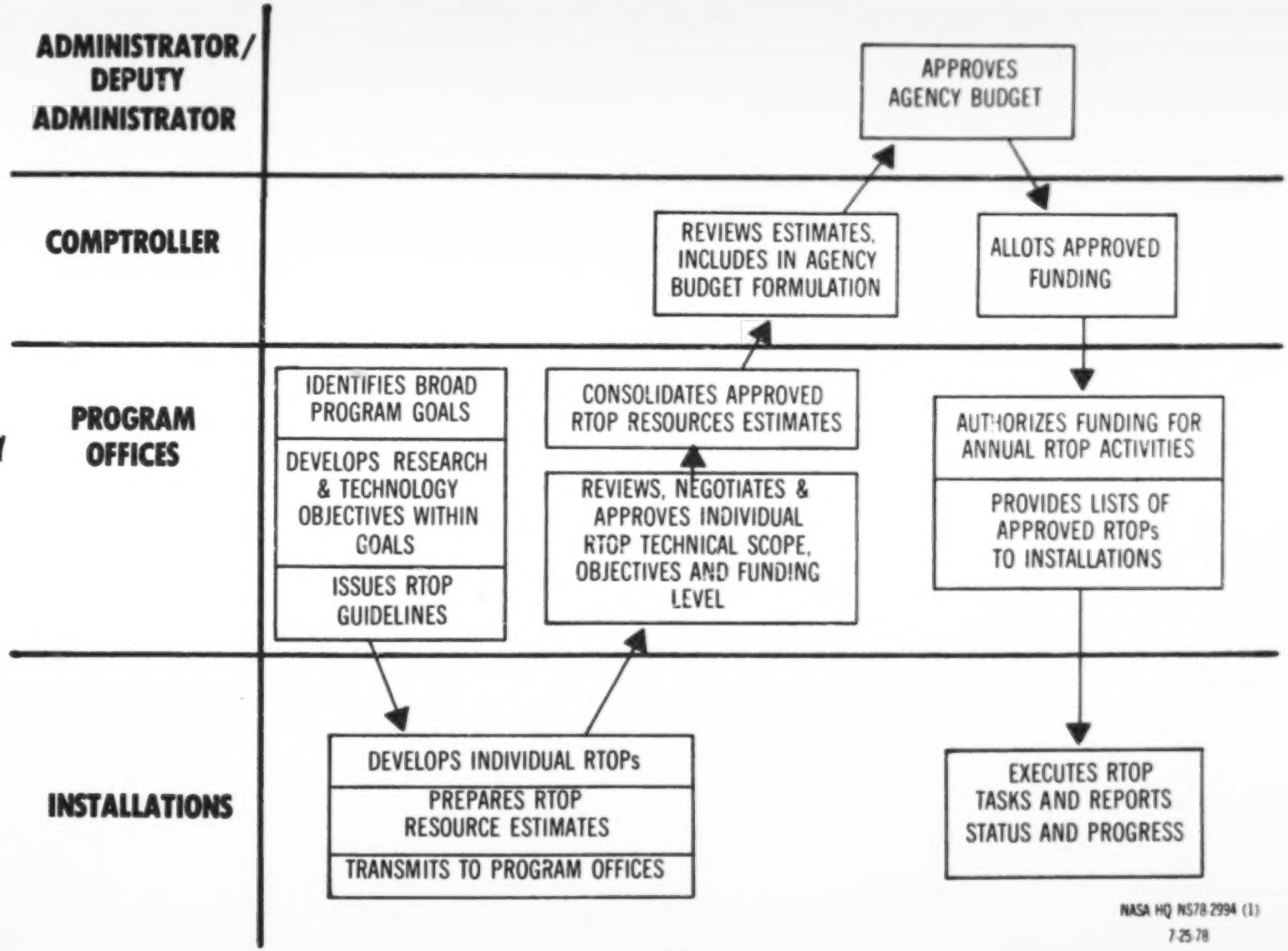
ADMINISTRATOR/ DEPUTY ADMINISTRATOR
APPROVES AGENCY BUDGET
COMPTROLLER
REVIEWS ESTIMATES, INCLUDES IN AGENCY BUDGET FORMULATION
ALLOTS APPROVED FUNDING
PROGRAM OFFICES
IDENTIFIES BROAD PROGRAM GOALS
DEVELOPS RESEARCH & TECHNOLOGY OBJECTIVES WITHIN GOALS
ISSUES RTOP GUIDELINES
CONSOLIDATES APPROVED RTOP RESOURCES ESTIMATES
REVIEWS, NEGOTIATES & APPROVES INDIVIDUAL RTOP TECHNICAL SCOPE, OBJECTIVES AND FUNDING LEVEL
AUTHORIZES FUNDING FOR ANNUAL RTOP ACTIVITIES
PROVIDES LISTS OF APPROVED RTOPs TO INSTALLATIONS
INSTALLATIONS
DEVELOPS INDIVIDUAL RTOPs
PREPARES RTOP RESOURCE ESTIMATES
TRANSMITS TO PROGRAM OFFICES
EXECUTES RTOP TASKS AND REPORTS STATUS AND PROGRESS
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Figure 4

implementation of the projects will evolve through a series of logical steps from concept through definition, design, development, operations, and data analysis. Management of projects and associated resources is characterized by the project planning document and the related project planning process. This process provides for an orderly and progressive buildup of knowledge covering all aspects of the project over its life cycle to a point where management has sufficient information to support its decisions on project implementation and operations.

The approach for gathering information to support the detailed implementation plan is flexible, but disciplined, allowing the project manager to tailor his plan to fit the project's individual needs; this provides an effective means for management review and approval of changes in scope throughout the life of the project.

Figure 5 depicts the process by which Research and Development project selections are approved.

- The Project Plan

A recommendation to commit the agency to a project is accompanied by a Project Plan, to be approved by the advocating Program Office. Guidelines for preparing project plans have been developed in NASA Handbook 7121.4. The Guidelines, together with NASA Management Issuance 7121.1C, prescribe the methodology, scope and considerations for preparing project plans. Some of the elements briefly stated are as follows:

- Project Objective - provides outline of project objectives and their relationship to the basic NASA program needs, missions and goals;

- Related Studies and Activities - summarization of previously conducted studies or related activities and their results;

- Technical Plan - a summary of the technical aspects of the project;

- A Management Approach - describing responsibilities for managing various elements of the project including the relationship and contributions of in-house and out-of-house sources;

- A Procurement Approach - Summary of major acquisitions required for the project. Emphasis is on outlining the approach for procuring major project

PROJECT APPROVAL AND IMPLEMENTATION CYCLE

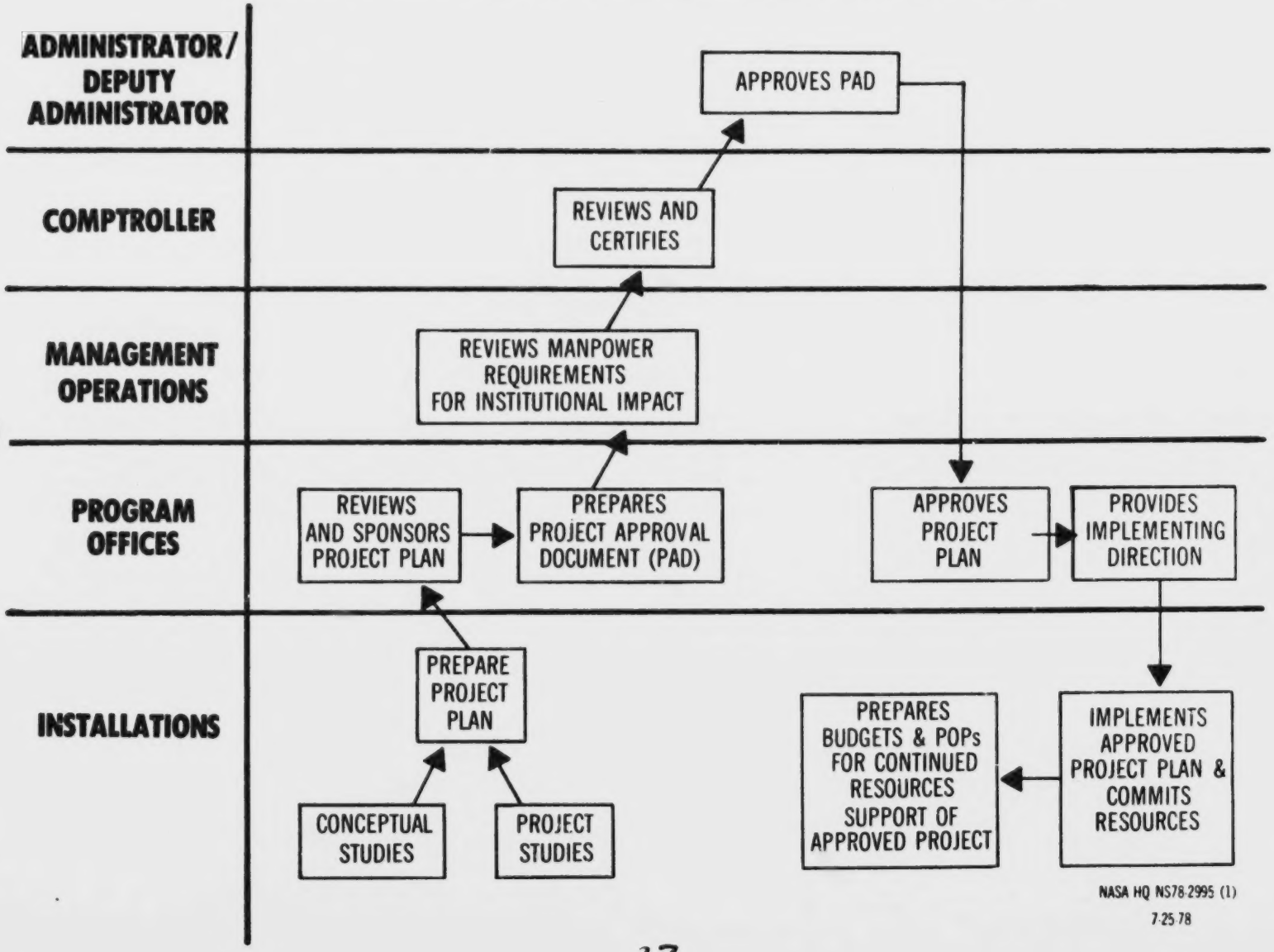

Figure 5

elements of R&D, hardware, software and other support described in the Technical Plan, using OMB Circular A-109 procedural guidelines and NMI 7100.14A for major systems acquisition where applicable;

- A Project Schedule - Providing the logical sequence of events for the project including clearly defined milestones and a proposed time phasing;

- A Resources Plan - Describing total project costs, including in-house costs, manpower requirements, facility and equipment needs;

- An Environmental Impact Statement - Describing any negative implications with appropriate corrective measures;

- A Mechanism for Management Control - Identifying controlled items and milestones for management review.

The Project Plan then, is a detailed implementation plan which provides information and the basis for program decisions. When approved, it represents an agreement between Headquarters Program Offices and the centers on how the project will be accomplished and the level of resources required. Assuming necessary clearances and authorization by Congress, an approved Project Plan is required for major projects and some research activities prior to their implementation.

- The Project/Program Approval Document

The Project/Program Approval Document (PAD) is the instrument used to record the authorization of approved projects. It is updated annually to reflect major programmatic changes. A summary specification document, the PAD outlines the technical plan, number of launches, project costs, and key milestones for management reviews. It is considered to be a contract between the Deputy Administrator and the cognizant Program Associate Administrator on the content, schedule, controls and resources required for implementing each project.

- Management Review of Programs and Activities

There are several mechanisms through which programmatic, institutional and resource matters are brought to senior managers for attention. Among these are a number of

regular forums which have been established for agency level coordination of important subjects, periodic review of progress and decision making.

The principal forum conducted by NASA management to promote more effective communications and aid the decision making process is the General Management Status Review (GMSR).

The purpose of the GMSR is to provide the opportunity on a regular, monthly basis for the heads of major headquarters offices to report to senior NASA management the status of programs and activities for which they are responsible. The basic thrust requires regular reporting on selected critical activities within each office. While the emphasis is on reporting significant accomplishments or problems, status reporting is also required monthly on all major activities. For other less critical activities reporting is on an exception basis.

In addition, there are monthly and quarterly Deputy Administrator's meetings structured for discussion of administrative and management matters and the Administrator's weekly staff meetings during which any subject may be discussed. Bi-weekly meetings are also held by the Administrator and Deputy Administrator to discuss any special opportunities, problems or issues.

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SECTION IV

INSTITUTIONAL MANAGEMENT

- **Definition**

  Institutional management includes all those activities and resources involved in the development, utilization and maintenance of the NASA in-house capability in an effective and efficient manner.

- **Organization and Approach**

  The Administrator and Deputy Administrator are responsible for the general direction of institutional management. The Associate Administrator for Management Operations serves as the principal advisor to the Administrator and Deputy Administrator on matters pertaining to the planning, execution, and evaluation of agencywide institutional management activities. Technical program direction for R&D work assigned to the centers is provided directly to them by the Headquarters Program Offices. Program direction for CofF is furnished by the Office of the Comptroller. Functional guidance in the major functional areas, such as procurement and financial management, is provided directly to the centers from the functional staff offices in the Headquarters.

  This is the NASA integrated approach to institutional management which assures the nation that human resources, organizational capability and superior technical facilities are available to perform the nation's aerospace tasks of the present and the future. Its successful operation necessitates a continuous, coordinated interaction among the program offices, staff offices, the Office of Management Operations, and the field centers.

- **Management Authorities**

  Program offices and staff offices are responsible for providing substantive planning and management guidance to the centers, describing the kind, manner and quality of work to be performed. However, a number of specific key institutional management authorities involving integration of programmatic and functional concerns are exercised by the Administrator and Deputy Administrator. These include:

  - Approval of the institutional budget and operating plans;

- Assignment of major project responsibilities to the centers;

- Approval of all executive-level personnel appointments;

- Selection of contractors in certain major procurements for both hardware and support contract effort;

- Approval of all major facility acquisitions to be proposed to the OMB and the Congress;

- Approval of all major changes to the NASA and field center organizations.

- Management Operations Role

The focus for institutional management policy and planning is the Associate Administrator for Management Operations. In his role as principal advisor to the Administrator on institutional matters, he supports the Administrator and Deputy Administrator in planning for and implementing the assignment of roles, missions and programs to NASA field centers. These were established after careful evaluation of such considerations as areas of proven technical excellence, unique capabilities to perform specialized work, and an appropriate balance of the agency's workload to assure optimum utilization of resources. Figure 6 is an example of the roles and missions assigned to one center.

Therefore, the Office of Management Operations's role is one of providing support to the Administrator and Deputy Administrator as an integrated focus for agencywide institutional management policy.

Coordinating the institutional budget and operating plan with the Program Offices and the staff offices, the Associate Administrator for Management Operations assures that personnel and other resources are allocated to the centers commensurate with their program responsibilities. (See Figure 7.)

- Personnel Management

The management of personnel is, of course, one of the most important aspects of institutional management. Direction is provided to centers through the NASA Personnel Management Program.

CENTER ROLES AND MISSIONS
AMES RESEARCH CENTER

- SHORT HAUL AIRCRAFT TECHNOLOGY
- HELICOPTER TECHNOLOGY
- COMPUTATIONAL FLUID DYNAMICS
- FLIGHT SIMULATION
- LIFE SCIENCES
  - HUMAN-VEHICLE INTERACTIONS
  - BIOMEDICAL SUPPORT SYSTEM
  - BIOLOGICAL EXPERIMENTS
  - EXTRATERRESTRIAL LIFE DETECTION
- PLANETARY PROBES
- PLANETARY SPACECRFT DEVELOPMENT & MISSION OPERATIONS
- AIRBORNE SCIENCE & APPLICATIONS
- FUNDAMENTAL AERODYNAMICS

Figure 6

OVERVIEW OF THE INSTITUTIONAL MANAGEMENT PROCESS

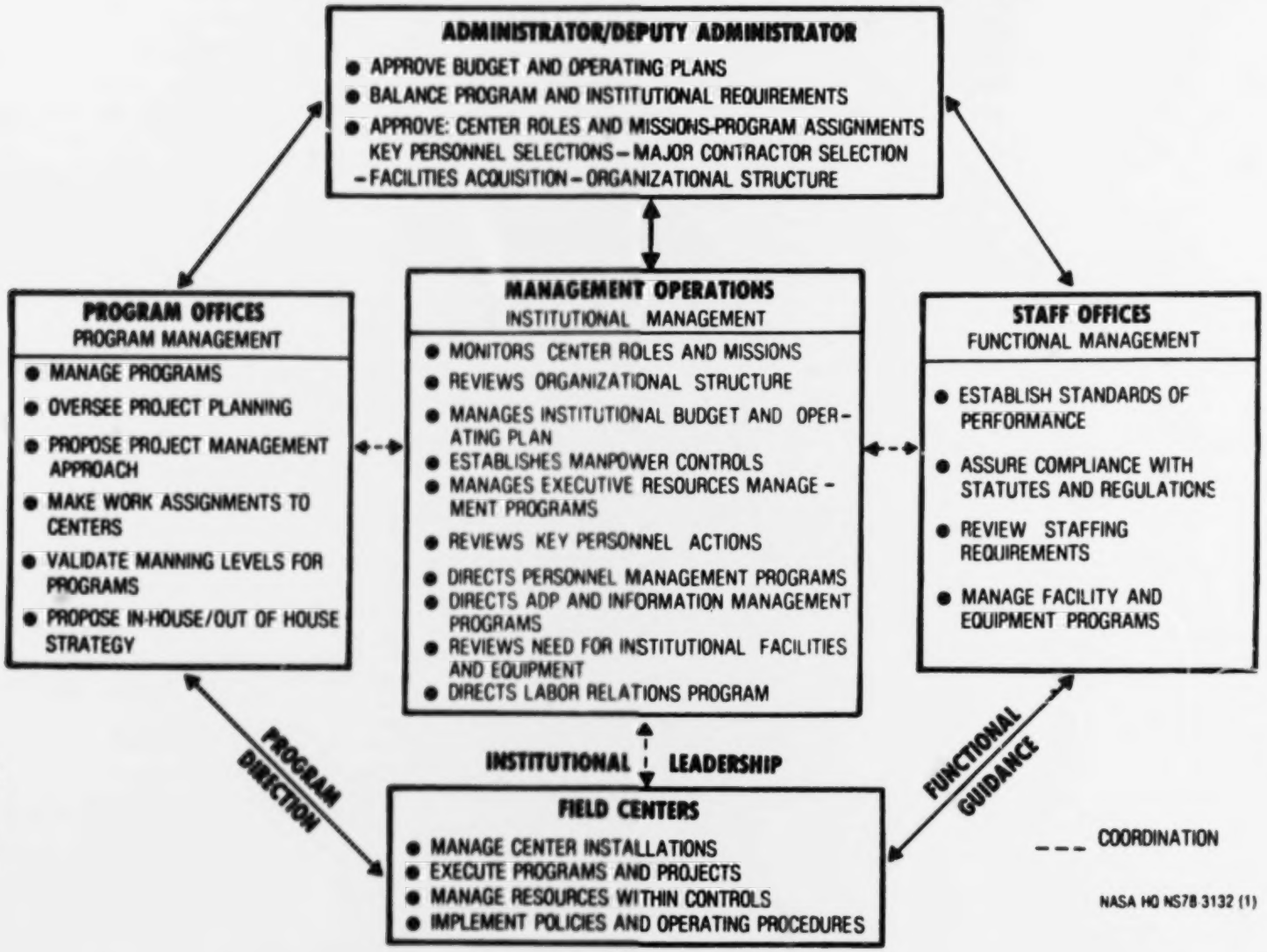
ADMINISTRATOR/DEPUTY ADMINISTRATOR
● APPROVE BUDGET AND OPERATING PLANS
● BALANCE PROGRAM AND INSTITUTIONAL REQUIREMENTS
● APPROVE: CENTER ROLES AND MISSIONS-PROGRAM ASSIGNMENTS KEY PERSONNEL SELECTIONS – MAJOR CONTRACTOR SELECTION – FACILITIES ACQUISITION – ORGANIZATIONAL STRUCTURE
PROGRAM OFFICES
PROGRAM MANAGEMENT
● MANAGE PROGRAMS
● OVERSEE PROJECT PLANNING
● PROPOSE PROJECT MANAGEMENT APPROACH
● MAKE WORK ASSIGNMENTS TO CENTERS
● VALIDATE MANNING LEVELS FOR PROGRAMS
● PROPOSE IN-HOUSE/OUT OF HOUSE STRATEGY
MANAGEMENT OPERATIONS
INSTITUTIONAL MANAGEMENT
● MONITORS CENTER ROLES AND MISSIONS
● REVIEWS ORGANIZATIONAL STRUCTURE
● MANAGES INSTITUTIONAL BUDGET AND OPERATING PLAN
● ESTABLISHES MANPOWER CONTROLS
● MANAGES EXECUTIVE RESOURCES MANAGEMENT PROGRAMS
● REVIEWS KEY PERSONNEL ACTIONS
● DIRECTS PERSONNEL MANAGEMENT PROGRAMS
● DIRECTS ADP AND INFORMATION MANAGEMENT PROGRAMS
● REVIEWS NEED FOR INSTITUTIONAL FACILITIES AND EQUIPMENT
● DIRECTS LABOR RELATIONS PROGRAM
STAFF OFFICES
FUNCTIONAL MANAGEMENT
● ESTABLISH STANDARDS OF PERFORMANCE
● ASSURE COMPLIANCE WITH STATUTES AND REGULATIONS
● REVIEW STAFFING REQUIREMENTS
● MANAGE FACILITY AND EQUIPMENT PROGRAMS
PROGRAM DIRECTION
INSTITUTIONAL LEADERSHIP
FUNCTIONAL GUIDANCE
FIELD CENTERS
● MANAGE CENTER INSTALLATIONS
● EXECUTE PROGRAMS AND PROJECTS
● MANAGE RESOURCES WITHIN CONTROLS
● IMPLEMENT POLICIES AND OPERATING PROCEDURES
--- COORDINATION
NASA HQ NS78 3132 (1)

Figure 7

This includes policies and procedures relating to position management, hiring practices, equal opportunity, work force adjustment actions, position classification, and an aggressive training and management development program.

Along this line, the agency has implemented career development programs for training and retraining of employees with particular emphasis on the preparation of promising junior employees for more senior positions.

In addition, specific attention is devoted to the identification and preparation of people who demonstrate the potential to move into executive positions. In conjunction with this, all executive personnel actions proposed by the centers and the heads of Headquarters Offices are reviewed by the Associate Administrator for Management Operations and approved by the Deputy Administrator.

- Manpower Management

Another important institutional activity is manpower management where effective integration of work assignments with organizations and the in-house work force is continuously balanced. This is a complex process performed by the Office of Management Operations with key input provided by the Program Offices and field centers.

The prime responsibility for efficient utilization of manpower rests in the field center subject to certain controls, reviews and analyses by Management Operations. The field centers integrate program work assignments and functional requirements into comprehensive center operating plans. These plans are forwarded to the Associate Administrator for Management Operations who reviews them with the Program Offices in preparations for the budget process.

After approval of the budget by the Administrator and Deputy Administrator, appropriate ceilings on civil service and support contractor manpower levels and an average grade control for civil service personnel are placed on each center. These manpower assignments and control ceilings are continuously reviewed by the Office of Management Operations as part of the process of managing field centers' operating plans.

- Facilities and Equipment

Coordination and Review

Facilities acquisition is a joint program/institutional responsibility with appropriate consideration given to

both programmatic need and maintaining the nation's base of technical excellence. In depth reviews of major acquisitions sponsored by Program Offices are conducted by the Director of Facilities Management to determine need, priorities, schedule and cost. The Associate Administrator for Management Operations advocates selected facilities on behalf of the centers as an appropriate institutional planning input to facilities review board activities.

Equipment Review

In the equipment area, particular attention is paid to major ADP and aircraft acquisitions and utilization, as well as the acquisition and use of other major equipment. Special analyses are routinely and periodically developed by the Office of Management Operations and functional staff offices to assess center and program needs.

Center Responsibilities

The operation and maintenance of facilities and equipment is a center responsibility. NASA Management Issuances provide appropriate policies and procedures for control and care of real and personal property, while broad guidelines and a framework for center planning are furnished by budget instructions and memoranda.

- Institutional Management System (IMS)

Institutional management is the decision making process that determines the plans for, and later the actual utilization of, resources for the functioning of the field centers. This decision making process is complemented by a uniform NASA-wide system for identifying, recording and reporting financial transactions arising from institutional (in-house) activities. The system is referred to as IMS, or Institutional Management System.

The classification of institutional activity is in terms of operating functions; i.e. transportation, maintenance and repair, data processing. At most field centers this is synonymous with organization entities. Since organization entities are the means by which all NASA objectives are realized through the appropriate assignment of responsibilities, operating functions form the IMS structure and are used for planning, budgeting, authorizing, controlling and reporting resource requirements and cost of performance for all institutional activity.

The cost of a function includes all of the objects of expenditure necessary to perform that function. This includes NASA personnel services and travel, support service contracts, supplies, equipment and other purchases of goods and services necessary to carry out that function.

The cost of an institutional function is categorized and budgeted as either Center Support, R&D Program Support or R&D Programs. Center Support consisting of center-wide services, supplies, and NASA personnel services and travel is in the Research and Program Management appropriation. The Research and Development appropriation funds the in-house portion of direct program, as well as multiprogram technical support.

R&D Program Support is the sum of the multiprogram technical support functions at a center which are required to carry out approved programs. While these functions directly support the programs, they are more efficiently controlled as specific institutional functions rather than as elements of programs.

In application, costs of these functions are relatable to the specific programs they support either at the time the work is performed or through appropriate allocation methods.

The centers prepare institutional operating plans each time a budget call is issued. These plans are the initial inputs for the Headquarters validation of institutional requirements. Subsequent actions include negotiations with Program Offices on the agreed level of program activity and assurance that the Program Offices have taken into account the estimated program support in the total cost of their projects. Finally, the Associate Administrator for Management Operations authorizes the centers to incur costs for the whole range of institutional activity within controlled limits, and the process of recording and reporting performance begins.

- Institutional Communications

With the exception of the dialogue attendant to the budget process, communicating important institutional information and decisions concerning agency commitments of a non-program nature is less structured than other agency systems. Functional offices receive reports which are responsive to the management of their respective disciplines. In addition, special reviews and

presentations are prescribed by NASA Management Issuances requiring review of center activities by appropriate functional offices (e.g., procurement awards over $5.0 million). An important recurring discipline is also provided through regularly scheduled Administrator's staff meetings and Center Directors' meetings. These are designed to keep senior level officials apprised of critical program changes and requirements of the institutional base.

SECTION V

FUNCTIONAL MANAGEMENT

- Definition

Functional management is defined as the centralized professional leadership, coordination, monitoring and evaluation of agencywide activities in a given technical or administrative functional area to assure effective, efficient and economical performance. It involves highly trained, specialized professionals in Headquarters and in counterpart organizations at each major installation.

- Organization and Approach

Functional management was formally established as an operating concept within NASA following the reorganization of November 1961. It was established as a fourth major element of NASA management in addition to "general management", "program management" and "institutional management."

Agency functional managers generally follow the principle of decentralized management. They set broad administrative policy, requirements and standards essential to effective and efficient functional performance but avoid levying detailed procedures and constraints on NASA field installations. This approach recognizes that, within broad guidance from Headquarters, field installation management can usually develop functional systems and procedures which are more responsive to unique on-site operational requirements than those developed centrally at Headquarters for uniform agencywide application. This flexibility in management approach: (1) Encourages the innovation and initiative at the operational level which is vital to dynamic responsive functional performance; (2) Also recognizes that certain functions e.g., those requiring strict regulatory or statutory compliance like financial management and procurement, will require closer management from Headquarters than those requiring broad adherence to agency policy and standards for effective performance.

- Examples

Procurement

The Director of Procurement, NASA Headquarters, has established a survey program to assess for NASA Management:

- The quality, effectiveness, and efficiency of NASA procurement.

- The adequacy of NASA policies and regulations in application at the field level.

- Achievement of uniformity among installations in application of NASA policies and regulations.

- Suggested action on problem areas encountered by field procurement activities.

Financial Management

The Director of Financial Management, NASA Headquarters, in maintaining a comprehensive and effective financial management program, provides policy guidance and functional supervision in the financial management area involving:

- Technical advice and assistance on financial management problems.

- Recommendations regarding organization and the allocation of personnel, funds, and other resources within the financial management area.

- Advising on the selection of key financial management personnel of field installations.

- Evaluating the performance of financial management functions throughout NASA and apprising both field installations and appropriate elements of Headquarters management of the general status of work in the financial management area.

Automatic Data Processing Management

The Director of Information Systems, NASA Headquarters, maintains management cognizance over agencywide ADP operations by:

- Establishing general procedures and policies to achieve the most economic acquisition and utilization of ADP resources consistent with program and project requirements.

- Providing comprehensive guidance to field installations on the acquisition, use, evaluation and review of ADP resources.

- Continuing to review Headquarters and field installation ADP practices to insure that ADP policies reflecting good management practices are followed.

- Serving as technical consultant to NASA general management for matters relating to ADP.

Supply and Equipment Management

The Director, Supply and Equipment Management, NASA Headquarters:

- Provides leadership, technical expertise and management overview of supply and equipment management programs at NASA installations and contractor locations.

- Develops and issues policies, guidelines and performance standards in all areas of supply and equipment management.

- Serves as the principal advisor on supply and equipment management within NASA.

LISTING OF FUNCTIONAL MANAGEMENT AREAS

- PROCUREMENT
- SAFETY, R&QA
- OCCUPATIONAL MEDICINE
- PERSONNEL
- COMMUNICATIONS
- AUTOMATIC DATA PROCESSING
- FINANCIAL MANAGEMENT
- FACILITIES MANAGEMENT
- SECURITY
- UNIVERSITY AFFAIRS
- PUBLIC AFFAIRS
- TRANSPORTATION
- EQUAL OPPORTUNITY
- EQUIPMENT AND SUPPLY
- INDUSTRIAL RELATIONS
- MANAGEMENT INFORMATION SYSTEMS
- SCIENTIFIC AND TECHNICAL INFORMATION SYSTEMS
- AIRCRAFT

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Figure 8

SECTION VI

RESOURCES MANAGEMENT

- General Definition

Agency resources consist of dollars, manpower, facilities and equipment. Resource planning and control is that process which the agency uses to determine, allocate and control resources required to perform program tasks and maintain the agency institutional base.

- Organization and Approach

The framework for resource planning and financial management is the Agencywide Coding Structure which is keyed to the overall goals, objectives and project structure of the agency. The underlying philosophy is that resources are allocated against program and institutional objectives.

Responsibility for completion of the tasks relating to these objectives is assigned to line managers with authority to utilize the resources allocated.

- The Budget Process

Appropriations

The principal and most visible resource process is that associated with planning and estimating dollar requirements or the budget. The NASA budget is organized under three separate appropriations from Congress:

- Research and Development - for activities in direct support of the agency's R&D program.

- Construction of Facilities - for new and modified facilities required in support of the agency program.

- Research and Program Management - for salaries, and travel of civil service employees in support of agency programs; and for the cost of operations and maintenance of general facilities and equipment.

Budget Cycle

The budget process encompasses the entire spectrum of NASA activities. It is complex and dynamic, essentially integrating and unifying all other management processes. It utilizes, as a planning base, up to five years of

resource data from the latest approved implementation documents. These consist of approved RTOP's, approved project plans and program and institutional guidelines describing the nature of tasks to be performed. In addition, the multi-year characteristic of the budget cycle requires extremely close coordination with field centers, Headquarters Offices, Office of Management and Budget, and Congress, as illustrated in Figure 9.

Budget Activities

In the broad sense, the budget process consists of three major activities:

- The review and assessment of program plans and their subsequent accomplishment as an integral part of the decision and budget process;

- The means by which major program and institutional elements are evolved, defined, documented and matched to program and institutional requirements and then approved and controlled throughout the life cycle of the program effort;

- The annual development of a budget request, and the progression of that request through various reviews for ultimate inclusion in the President's budget and subsequent submission to Congress.

NASA Comptroller and the Budget Call

The NASA Comptroller is responsible for the overall compilation of the budget and provides primary point of contact with the OMB. Working through the Program Offices, the Office of Management Operations and field centers, he establishes the overall funding levels required to support agency programs; these are submitted to the Administrator for approval.

Beginning 18 months prior to the start of a fiscal year the NASA Comptroller issues a detailed annual budget call, identifying specific policies and guidelines to be observed during the preparation process. These guidelines are deepened with each succeeding step as they flow from Program Offices and the Office of Management Operations to centers providing specific programmatic, institutional and project instructions to be used in the development of the grass roots estimates. Once developed, the grass roots estimates go through a series of reviews at key decision points, e.g., the Center Director, the Program Office and

THE NASA BUDGET CYCLE

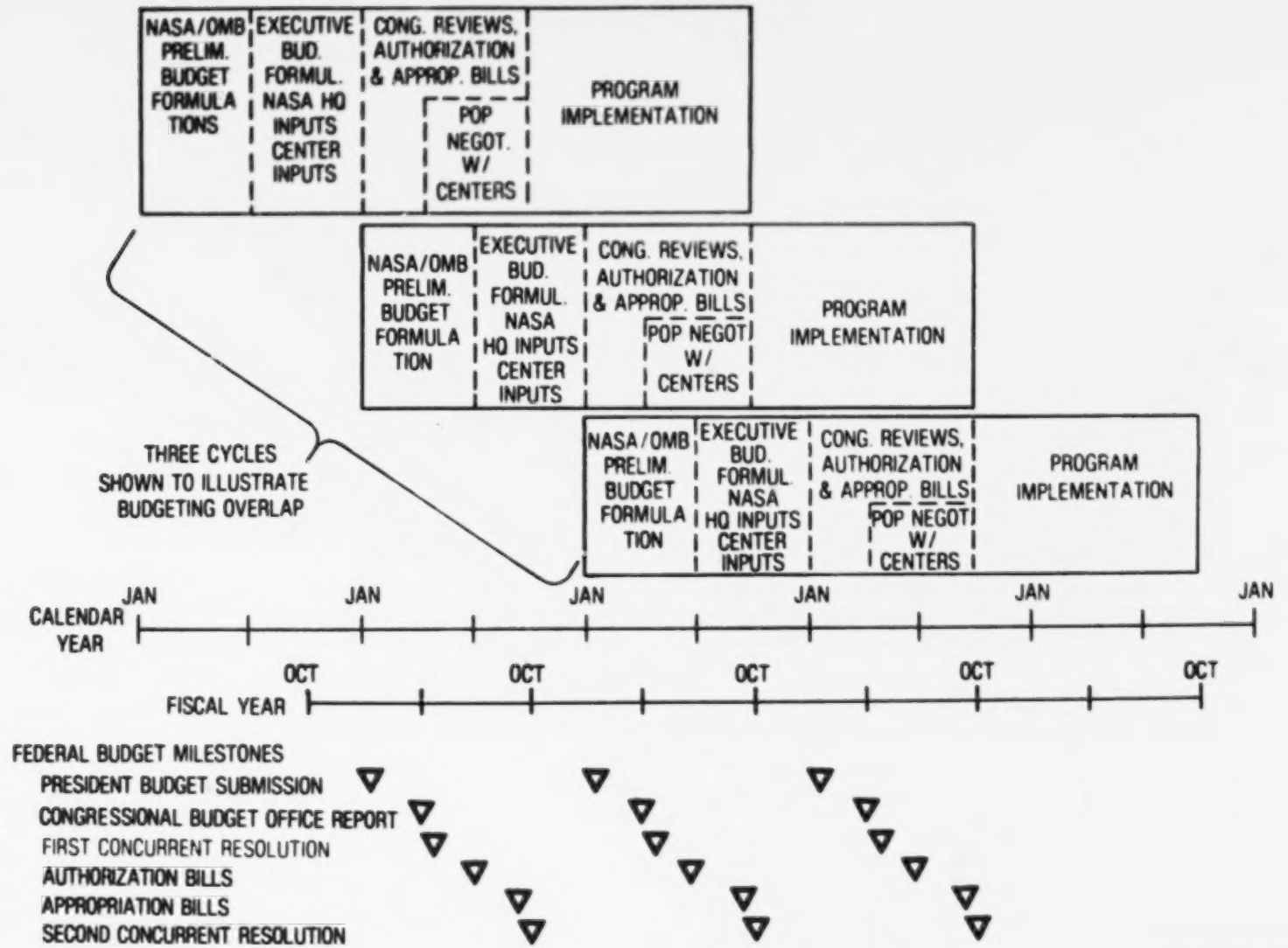

Figure 9

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the Associate Administrator for Management Operations, and provide the basis for a budget submission to the Comptroller. Principal documents developed from this process are the center and Headquarters Program Operating Plans which serve as a baseline to measure budget performance. An overview of the process is shown in Figure 10.

- Funding Approval and Control

Once budgets have been approved, NASA controls the flow of funds through three authority documents. These are the Resource Authority Warrants; the NASA Form 506 Green and White which grant program authority; and the NASA Form 504, which provides allotment or obligation authority. The first two documents are issued in accordance with the program, projects and activities reflected in the Agency-wide Coding Structure and the latest approved budget. Allotment authority is provided at a more summary level within total funding availability.

Resource authorities continue to flow downward with smaller allocations being made against measurable sub-objectives, projects and tasks in accordance with Program Office and field center instructions until available at the operating unit. Figure 11 provides a diagram of the process.

- Budgeting for Manpower

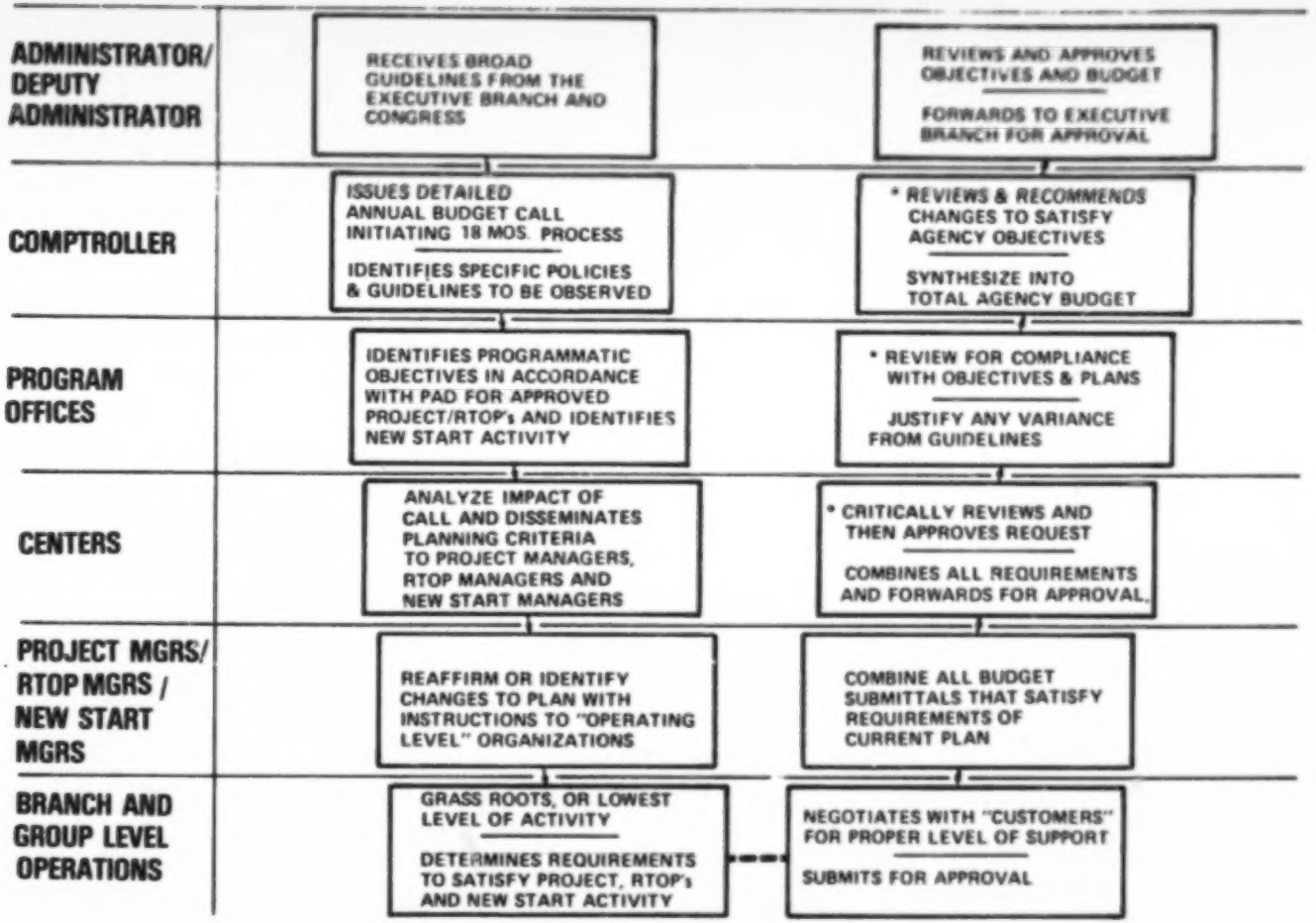
Definition

One of the more vital assets of the agency is its human resources or manpower. Generally speaking, manpower includes all personnel (civil service and contractor) associated with the Space and Aeronautics Programs. For purposes of NASA institutional and resource planning, however, manpower includes only civil service, and man-year equivalents of support service contractors who perform on-site tasks. The latter fall into four broad classes of effort: Administrative Services, Technical Services, Facility Services and Direct Engineering Support.

Funding

The cost of NASA civil service manpower program (i.e., salaries, training and benefits) is included in the Research and Program Management (R&PM) budget, while the cost of support service contractor man-years of effort is included in either the Research and Development (R&D) budget or the R&PM budget, depending on whether the task is in support of R&D programs or the institutional base.

R&D BUDGET PROCESS


ADMINISTRATOR/ DEPUTY ADMINISTRATOR
RECEIVES BROAD GUIDELINES FROM THE EXECUTIVE BRANCH AND CONGRESS
REVIEWS AND APPROVES OBJECTIVES AND BUDGET
FORWARDS TO EXECUTIVE BRANCH FOR APPROVAL
COMPTROLLER
ISSUES DETAILED ANNUAL BUDGET CALL INITIATING 18 MOS. PROCESS
IDENTIFIES SPECIFIC POLICIES & GUIDELINES TO BE OBSERVED
* REVIEWS & RECOMMENDS CHANGES TO SATISFY AGENCY OBJECTIVES
SYNTHESIZE INTO TOTAL AGENCY BUDGET
PROGRAM OFFICES
IDENTIFIES PROGRAMMATIC OBJECTIVES IN ACCORDANCE WITH PAD FOR APPROVED PROJECT/RTOP's AND IDENTIFIES NEW START ACTIVITY
* REVIEW FOR COMPLIANCE WITH OBJECTIVES & PLANS
JUSTIFY ANY VARIANCE FROM GUIDELINES
CENTERS
ANALYZE IMPACT OF CALL AND DISSEMINATES PLANNING CRITERIA TO PROJECT MANAGERS, RTOP MANAGERS AND NEW START MANAGERS
* CRITICALLY REVIEWS AND THEN APPROVES REQUEST
COMBINES ALL REQUIREMENTS AND FORWARDS FOR APPROVAL
PROJECT MGRS/ RTOP MGRS / NEW START MGRS
REAFFIRM OR IDENTIFY CHANGES TO PLAN WITH INSTRUCTIONS TO "OPERATING LEVEL" ORGANIZATIONS
COMBINE ALL BUDGET SUBMITTALS THAT SATISFY REQUIREMENTS OF CURRENT PLAN
BRANCH AND GROUP LEVEL OPERATIONS
GRASS ROOTS, OR LOWEST LEVEL OF ACTIVITY
DETERMINES REQUIREMENTS TO SATISFY PROJECT, RTOP's AND NEW START ACTIVITY
NEGOTIATES WITH "CUSTOMERS" FOR PROPER LEVEL OF SUPPORT
SUBMITS FOR APPROVAL

* KEY DECISION POINTS

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Figure 10

DISTRIBUTION OF APPROPRIATED R&D, CofF AND R&PM FUNDS

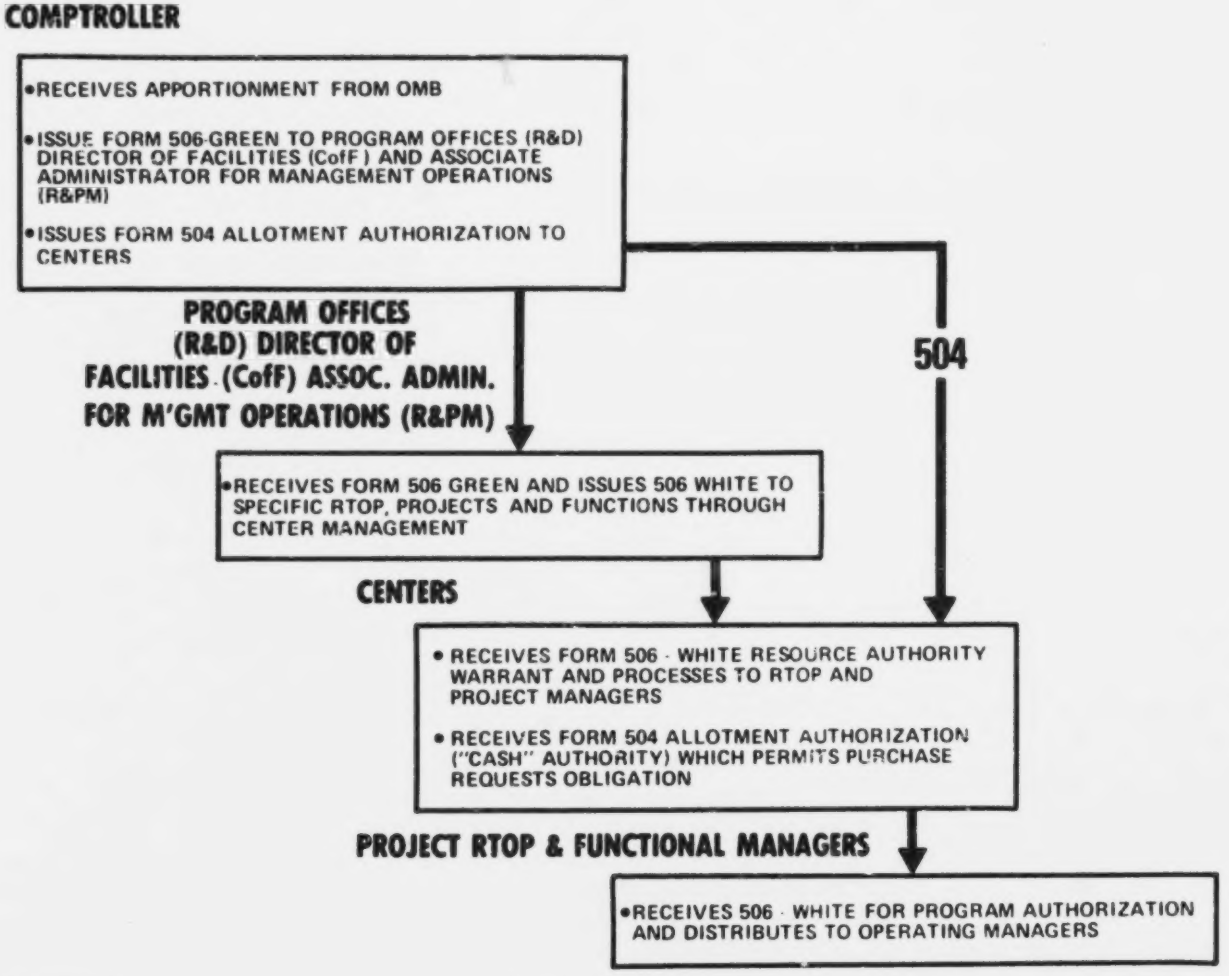
COMPTROLLER
•RECEIVES APPORTIONMENT FROM OMB
•ISSUE FORM 506-GREEN TO PROGRAM OFFICES (R&D) DIRECTOR OF FACILITIES (CofF) AND ASSOCIATE ADMINISTRATOR FOR MANAGEMENT OPERATIONS (R&PM)
•ISSUES FORM 504 ALLOTMENT AUTHORIZATION TO CENTERS
PROGRAM OFFICES (R&D) DIRECTOR OF FACILITIES (CofF) ASSOC. ADMIN. FOR M'GMT OPERATIONS (R&PM)
504
•RECEIVES FORM 506 GREEN AND ISSUES 506 WHITE TO SPECIFIC RTOP, PROJECTS AND FUNCTIONS THROUGH CENTER MANAGEMENT
CENTERS
• RECEIVES FORM 506 - WHITE RESOURCE AUTHORITY WARRANT AND PROCESSES TO RTOP AND PROJECT MANAGERS
• RECEIVES FORM 504 ALLOTMENT AUTHORIZATION ("CASH" AUTHORITY) WHICH PERMITS PURCHASE REQUESTS OBLIGATION
PROJECT RTOP & FUNCTIONAL MANAGERS
•RECEIVES 506 - WHITE FOR PROGRAM AUTHORIZATION AND DISTRIBUTES TO OPERATING MANAGERS

Figure 11

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Manpower Planning Process

The same hierarchy of goals and objectives used to formulate the Research and Development programs and related institutional goals and objectives, are used as the baseline for manpower planning.

Centers begin the planning process with:

- Programmatic inputs from the Program Offices, including an approved Project Plan, which addresses project assignments, in-house/out-of-house tasks, technical approach, funding, etc.;

- Guidance with respect to center roles and missions, provided by the Associate Administrator for Management Operations, center personnel ceiling, skill mix, etc. to maintain the institutional base.

The centers use this guidance, together with an assessment of project status, to develop their overall planning strategy for manpower utilization (Figure 12). From these data, center grass root manpower estimates are developed at the Program/Project level on an "Analysis of In-House Manpower Requirements Form," reviewed by the Center Director and submitted to Headquarters. Each Program Office reviews proposed manpower requirements for redundancy and need, while the Associate Administrator for Management Operations validates the overall reasonableness of center requirements within the framework of established roles and missions, and resource limitations. After assuring appropriate negotiations and compromises have taken place between Program Offices and centers, he then submits manpower requirements as part of the R&PM budget documentation.

- Manpower Approval and Control

The Administrator approves the various budgets, and the Associate Administrator for Management Operations assigns manpower ceilings on the basis of what is necessary to meet authorized program and institutional objectives.

The Center Director assigns manpower ceilings and authorizes program tasks to operating units on the basis of approved organizational roles, responsibilities and programmatic agreements.

The Center Director, project managers and managers of operating units at the field centers monitor the progress of work assignments and resources used, responding to

OVERVIEW OF THE MANPOWER UTILIZATION PLANNING PROCESS

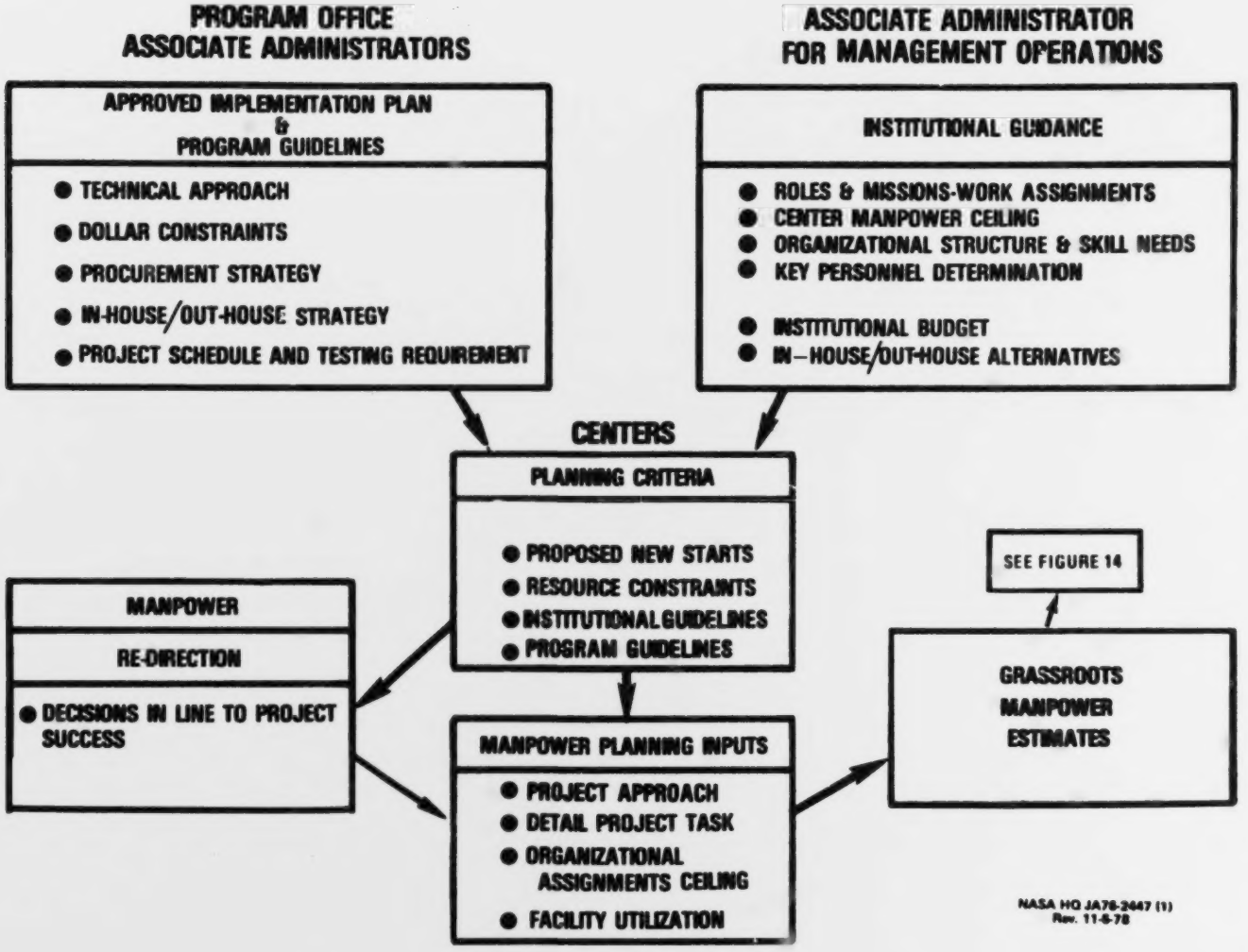

Figure 12

critical situations by transferring or reallocating manpower within existing allocations as required.

An important feature of the entire process is flexibility in the use of manpower to accomplish specific units of work. Controls are established which permit the redirection of manpower resources by center operating units for authorized work according to need and priority of task. An overview of the manpower approval process is included in Figure 13.

- Facilities Management

Definition

Facilities management is that process concerned with the acquisition, operation, utilization and maintenance of facilities in support of agency programs.

Facilities Planning Process

The planning mechanism for the Construction of Facilities is well defined. All new construction of and major improvements to technical facilities must be separately justified and advocated by each Program Office, based on program content. Proposed efforts appropriate to the role of the center are separately validated for cost and all major projects are investigated by the Director of Facilities Management. He makes a determination as to need and relative urgency of the proposed project, based on planned usage, availability of existing in-house and out-of-house facilities and the overall condition of existing facilities.

To ensure that institutional needs are also considered, the Office of Management Operations reviews center submissions and advocates those projects which are essential to the agency's continued institutional vitality and necessary to support the agency's overall mission. A fundamental building block in the process is the center Facility Master Plan which is developed to reflect the broad center roles and provide and overview of future major facility needs for each center.

Budgeting for Facilities

Major facility projects are budgeted under the Construction of Facilities appropriation. The major projects (Construction in excess of $250,000 and Rehabilitation and Modification in excess of $500,000) are separately identified in

OVERVIEW OF THE MANPOWER APPROVAL PROCESS

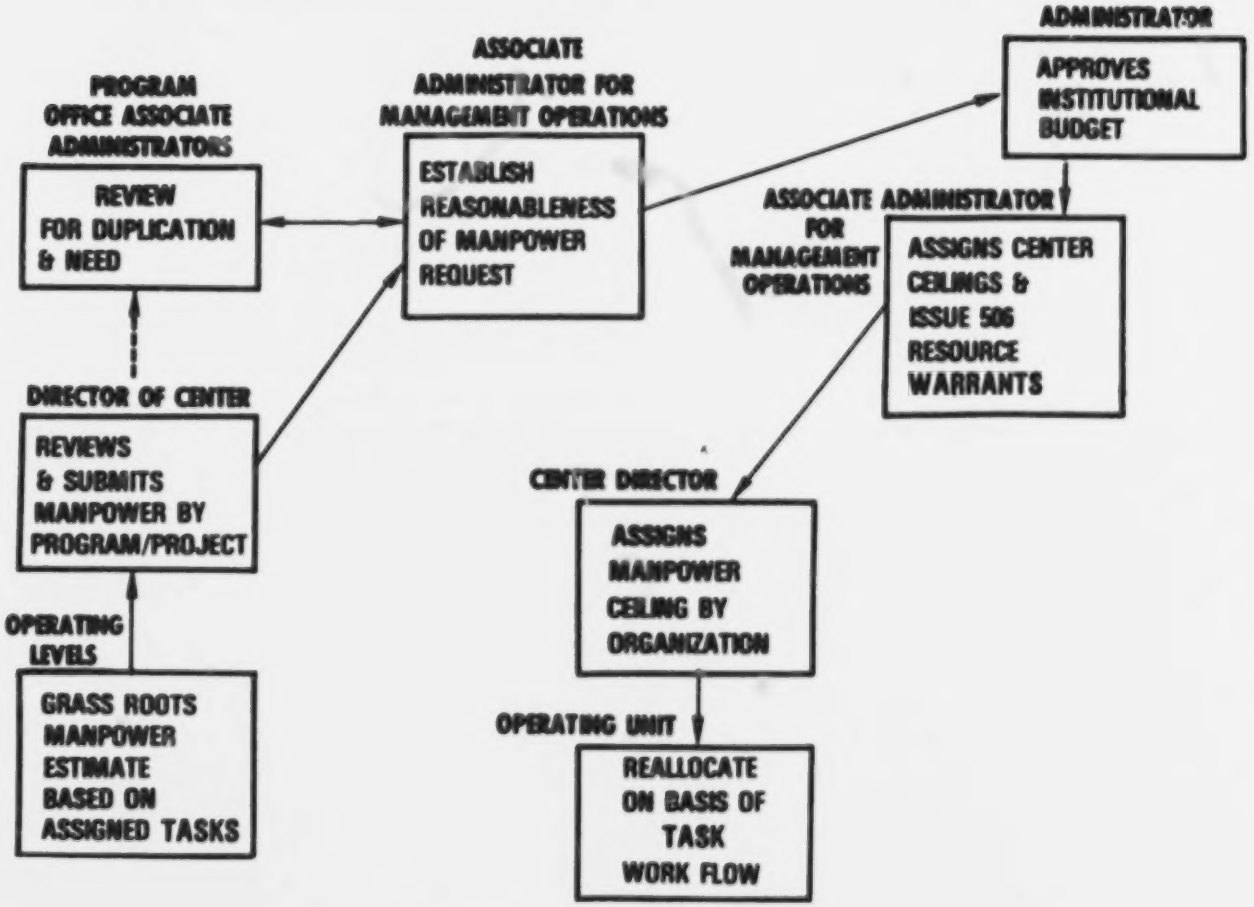
ADMINISTRATOR
APPROVES INSTITUTIONAL BUDGET
ASSOCIATE ADMINISTRATOR FOR MANAGEMENT OPERATIONS
ESTABLISH REASONABLENESS OF MANPOWER REQUEST
PROGRAM OFFICE ASSOCIATE ADMINISTRATORS
REVIEW FOR DUPLICATION & NEED
ASSOCIATE ADMINISTRATOR FOR MANAGEMENT OPERATIONS
ASSIGNS CENTER CEILINGS & ISSUE 506 RESOURCE WARRANTS
DIRECTOR OF CENTER
REVIEWS & SUBMITS MANPOWER BY PROGRAM/PROJECT
CENTER DIRECTOR
ASSIGNS MANPOWER CEILING BY ORGANIZATION
OPERATING LEVELS
GRASS ROOTS MANPOWER ESTIMATE BASED ON ASSIGNED TASKS
OPERATING UNIT
REALLOCATE ON BASIS OF TASK WORK FLOW

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Figure 13

the Congressional budget submission. Minor facility projects (Construction over $25,000 and Rehabilitation and Modification over $50,000) are also separately identified by item in the Construction of Facilities Congressional budget submission except that requirements between $25,000 and $50,000 for construction and between $50,000 - $100,000 for rehabilitation and modification are identified in total and supported by additional backup material. Routine facilities work on projects below the limits specified above and maintenance and operations of facilities are budgeted under the Research and Development or Research and Program Management appropriations depending on whether the facilities are generally used in support of Research and Development or institutional programs.

Facilities Operation

The Center Director is responsible for operation, maintenance, and effective utilization of his center's facilities. Operating plans are developed on the basis of estimated usage, with key inputs being project plans, negotiated RTOPs, task assignments, scheduled maintenance, general condition of the facility and manpower availability. Actual operations are controlled by the Center Director, project manager, facility managers, and other operating units who monitor the progress of their task assignment and the conditions of facilities, rescheduling work according to established priorities. Technical facility utilization reviews occur both as an integral part of the center Program Operating Plan (POP) formulation and review process and as separate "dedicated" utilization analyses. The center POP related reviews ensure a periodic validation of facility operations in terms of programmatic requirements and resource levels, while other utilization considerations such as scheduling, maintenance and repair, and rehabilitation are part of continuing center management assessment.

Headquarters level review and evaluation is provided by the Director of Facilities through center reports on building space utilization as prescribed in NASA Management Issuance 7234.1, and through specially conducted studies related to facility and equipment management and utilization, automatic data processing, launch vehicles, wind tunnels, etc.

- C of F Approval and Control

The approval and control process for construction of major facilities projects is similar to the process used for

approving a new project. It too involves an evolutionary process of planning, and approval with key decision points being evidenced in the validation of requirements, approval of engineering design and detailed approval of the implementation plan by the Director of Facilities. Final approval is made by the Administrator or Deputy Administrator as part of the budget process with participation and recommendation from the Comptroller, the Associate Administrator for Management Operations and cognizant Program Offices.

- Equipment Management

Definition

NASA has two broad categories of equipment: special purpose equipment in support of specific programs and projects, and general purpose equipment in support of multi-program mission and institutional efforts.

Budgeting for Equipment

The cost of acquiring most special purpose and some multi-program general equipment is included in the Research and Development (R&D) Budget. The cost of other general purpose equipment is part of the Research and Program Management (R&PM)budget. Major equipment acquisitions over $250,000 acquired with R&D funds for installation at a NASA center are identified and assessed for need as part of that process using the Equipment Acquisition Document (EAD), NASA Form 1511.

Effective Utilization and Control

NASA has developed and implemented an agencywide Equipment Visibility System to insure effective reutilization of equipment. The system identifies each high value ($1,000 or more) equipment item, its use, its cost, its location, and condition. Through the Equipment Visibility System, centers must screen new equipment requirements against agencywide inactive assets. Items unassigned and inactive for specified periods are identified for disposal.

Property records are maintained and equipment is managed inaccordance with NASA Equipment Management Manual, NHB 4200.1. Centers are responsible for maintenance and control of their equipment, with actual management assigned to appropriate organizational units. Top management attention is focused on this area through a system of scheduled walk-throughs routinely performed by high level officers of the centers, and through regular inspections by functional and management audit teams.

SECTION VII

SUMMARY

This digest has attempted to provide a summary description of the management planning and control processes in the centers and in Headquarters with enough content to convey how the processes work. These processes include R&D program management, manpower management, facilities management, the budget process and an overview of the total NASA management system which describes the role of Headquarters and how it interfaces with the centers.

However, it is important not to impute more rigidity and inflexibility to these processes than exists in reality. The nature of R&D work dictates that the management processes be designed to respond quickly to unforeseen developments and problems, and to allow room for innovation and creativity to thrive. A deeper penetration of the processes will demonstrate that there are procedures that allow for this.

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APPENDIX

- List of Documents

This section contains a list of key documents which illustrate the techniques of management employed by Headquarters Program Offices and certain functional management offices fulfilling their assigned roles.

Program Management

NMI 1152.57B - NASA Council

NMI 7100.12 - Standard RTOP Management System

NMI 7100.14A - Major Systems Acquisitions

NMI 7121.1C - Planning and Approval of Major Research and Development Projects

NHB 7121.4 - Guidelines for Project Planning

NMI 8020.18B - Space Shuttle Program Management

NMI 8020.21A - Spacelab Program Management

NMI 8020.22 - NASA Interim Upper Stage Project

NHB 8030.6 - Guidelines for Acquisition of Investigations

NMI 8430.1A - Tracking and Data Acquisition Support for Unmanned Space Flight Projects

Institutional Management

NASA Supplements to the Federal Personnel Manual

NMI 1103.11 - Role and Responsibilities--Associate Administrator for Management Operations

Functional Management

NHB 2410.1B - Computer Resources Management

NHB 4200.1 - NASA Equipment Management

NHB 5100.2 - NASA Procurement Regulation

NMI 7232.1C - Master Planning of NASA Facilities

NMI 7234.1B - Facilities Utilization Program

NPD 7300.2 - Policies and Reporting on NASA Facilities Requirements

NHB 7320.1A - Facilities Engineering Handbook

NMD 7330.1B - Approval Authorities for Facilities Projects

NMI 7330.2A - Preliminary Engineering for NASA Facility Projects

NMI 8800.1E - Real Property Physical Accountability, Recording and Reporting

NMI 8800.8A - Policy Concerning Location of New NASA Offices and Other Facilities in Rural Areas

NMI 8811.5 - Procedure for Approval of Certain Real Property Acquisitions

Resources Management

NMI 7000.1B - Authorization and Control of Agency Programs

NMI 7000.3 - Allocation and Control of Agency Resources

NHB 7400.1 - NASA Budget Administration Manual

FMM 9100 - NASA Financial Management Manual

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15. Supplementary Notes

16. Abstract

This digest describes the major management systems used to plan and control NASA programs and resources and how they are integrated to form the agency's general management approach in carrying out its mission.

An appendix lists documents containing more detailed descriptions of the processes and techniques involved in the agency's major management systems.

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